Quarterly Report – Public Page

Date of Report: *March 31, 2011*

Contract Number: DTPH56-10-T-000016

Prepared for: PHMSA of USDOT and a group of sponsors

Project Title: Realistic Strain Capacity Models for Pipeline Construction and Maintenance

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Pipelines may experience large longitudinal strains in areas of frost heave and thaw settlements in arctic regions, seismic activities, mine subsidence, etc. At least two failure modes are possible when pipelines are subjected to the large longitudinal strains: *tensile rupture* and *compressive buckling.* These two failure modes are treated separately with different levels of refinement in the current industry practice. In actual pipelines, the two failure modes interact and work simultaneously. The main objective of this project is to develop a unified approach to the two failure modes. The industry and regulators are expected to benefit from the outcome of this project through (1) refined strain capacity models and (2) effective allocation of resources to address the varying levels of possible threats to pipeline safety and integrity.

CRES continued the development of the analysis approach for realistic strain capacity models. The existing tensile and compressive strain capacity models were reviewed. CRES has started the model development. To accommodate the schedule of all sponsors, two project kick-off meetings were held on March 28th and March 31st respectively.

There are no major findings to report at this time. No public meetings are scheduled for next quarter.